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January 13, 1999

BY HAND DELIVERY

Magalie Salas, Esquire
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: WT Docket Nos. 98-20 and 96-188

Dear Ms. Salas:

Enclosed are the original and nine copies of the Petition For Partial Reconsideration of Comsearch for filing in the above-referenced docket.

Kindly date-stamp and return the extra copy of this cover letter.

If there are any questions about this filing, please call me at the number above.

Respectfully submitted,

Mitchell Lazarus
Counsel for Comsearch

Enclosures
cc: Service List

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CERTIFICATE OF SERVICE

I, Crystal McElroy, a secretary in the law firm of Fletcher Heald & Hildreth, P.L.C. do hereby certify that a true copy of the foregoing "Petition for Partial Reconsideration of Comsearch" was sent this 13th day of January, 1999, by hand-delivery, to the following:

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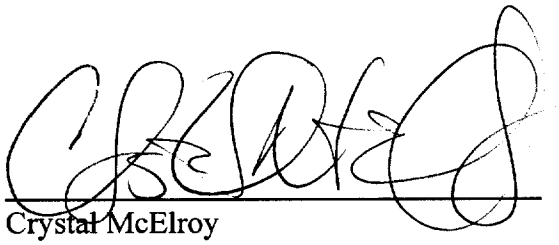

Crystal McElroy

ORIGINAL

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
Biennial Regulatory Review — Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97, and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services	)	WT Docket No. 98-20
	)	
Amendment of the Amateur Service Rules to Authorize Visiting Foreign Amateur Operators to Operate Stations in the United States	)	WT Docket No. 96-188 RM-8677

PETITION FOR PARTIAL RECONSIDERATION OF COMSEARCH

Pursuant to Section 1.429 of the Commission's Rules, Comsearch respectfully seeks partial reconsideration of the Report and Order in the above-captioned proceeding to the extent indicated herein.[1]

Comsearch is an independent engineering firm that specializes in spectrum management of terrestrial microwave, satellite, and mobile telecommunications systems. Comsearch provides consultant services to all classes of users, including those regulated under Part 101 of the Commission's Rules. Comsearch's expertise in the issues discussed below derives from its experience in database development and management, frequency engineering and coordination, and FCC application preparation.[2]

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[1] Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, WT Docket No. 98-20, Report and Order, FCC 98-234 (released Oct. 21, 1998) ("Report and Order").

[2] Comsearch participated in the earlier phases of this proceeding. Comments of Comsearch (filed May 22, 1998); Reply Comments of Comsearch (filed June 5, 1988), *responding to* Development and Use of the Universal Licensing System in the Wireless

I. TWO PROVISIONS IN THE REPORT AND ORDER WILL DETRACT FROM THE COMMISSION'S OVERALL GOALS OF SIMPLICITY AND CONSISTENCY IN THE WIRELESS RADIO REGULATIONS.

The proliferation of radio services over the past decades has yielded a patchwork of rules with many unnecessary inconsistencies. The present docket has addressed many of those inconsistencies by consolidating the application and processing rules of the several radio services into a single set of provisions. The Commission's goal is to

> conform inconsistent procedures to the extent feasible. We believe that a single, consolidated set of rules will make our licensing procedures more consistent across different services and will make the rules more accessible and understandable to applicants, licensees, and the public.[3]

Comsearch endorses the Commission's objective of resolving inconsistencies and simplifying the Rules.

In one respect, however, the changes go too far. In the name of promoting consistency, two of the new provisions instead threaten unnecessary interference among spectrum users, particularly in the fixed services. For that reason Comsearch seeks reconsideration of these amendments:

- Section 101.103(d)(1), which does not require frequency coordination for minor amendments or modifications, as newly defined in Section 1.929;[4] and

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Telecommunications Services, 13 FCC Rcd 9672 (1998) ("Notice").

[3] Notice, 13 FCC Rcd at 9687, ¶ 31.

[4] This is the public's first opportunity to comment on the language of Section 101.103(d)(1). Although the Notice proposed in general terms that frequency coordination be limited to major amendments and modifications, 13 FCC Rcd at 9694, ¶ 50, it did not include the rule language subsequently adopted. *See* Comments of Comsearch at 3.

- Report and Order at ¶ 88, which requires notification of minor changes only to the coordinator and the Commission.[5]

As Comsearch explains in detail below, minor changes in the fixed services can yield major interference. It is not in the public interest to increase the potential for degradation and outages of vital point-to-point communications systems, merely for the sake of superficial consistency in rule language. The Commission should restore the principle that frequency coordination is required for "any changes or combination of changes which would cause harmful electrical interference to an authorized facility . . . ."[6]

II. THE COMMISSION SHOULD REQUIRE NOTICE TO ALL AFFECTED USERS OF ANY TECHNICAL CHANGES IN THE FIXED SERVICES.

The amended Rules require frequency coordination only for changes that qualify as major.[7] The Commission intended "not . . . to change the substance of our existing definitions of major and minor changes."[8] In fact, however, the change in requirements for frequency coordination brings new and substantive consequences to the major/minor classification.

The differing definitions of major vs. minor changes for the Private Land Mobile Radio Service and the Fixed Services have been maintained in the new Section 1.929. The definitions

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[5] This requirement appears in the new Part 90 rules, 47 C.F.R. § 90.135(b) (as amended), but does not appear in the amended Part 101.

[6] 47 C.F.R. § 101.29(c)(1)(viii) (former version). The Commission should also correct a circularity in the Rules. Section 1.929(a)(5) defines a change as major if it requires frequency coordination. But other provisions require frequency coordination only for changes defined as major. *See* 47 C.F.R. §§ 90.135(b), 101.103(d)(1). Comsearch believes the Commission can resolve the circularity, without altering the substantive effect of the Rules, simply by deleting Section 1.929(a)(5).

[7] 47 C.F.R. §§ 90.175 (preamble), 101.103(d)(1).

[8] Report and Order at ¶ 6.

remain so dissimilar that a single "major vs. minor" criterion cannot reasonably trigger frequency coordination rules in the two services. The Commission has left unchanged the portion of Section 101.103(d)(1) that provides, "In engineering a system or modification thereto, the applicant must, by appropriate studies and analyses, select sites, transmitters, antennas and frequencies that will avoid interference in excess of permissible levels to other users."[9] It is this engineering analysis, rather than the arbitrary criteria listed in Section 1.929, that properly determines whether a proposed change is "major" or "minor" with respect to the need for frequency coordination.

A. Some "Minor" Changes in Fact Increase the Risk of Interference.

The Commission said:

> [W]e are confident that only those changes considered major have the potential to impact an original coordination enough to merit a new coordination. In other words, coordinators seldom, if ever, should need to alter substantially frequency and/or site recommendations based on a minor amendment to an application or modification of a license.[10]

Comsearch respectfully disagrees, as to the fixed services. At least four types of amendment and modification classed as minor in fact can introduce significant interference among point-to-point facilities. So long as frequency coordination is not required for these changes, the victim licensee may never know what caused the interference.

1. ***Location changes of 5 seconds or less in latitude and longitude.***[11]

Interfering transmitters and victim receivers are often close to one another, especially in the 18,

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9 47 C.F.R. § 101.103(d)(1).

10 Report and Order at ¶ 87.

11 47 C.F.R. § 1.929(d)(1).

23, and 38 GHz bands, where path lengths tend to be short. At typical U.S. latitudes, a site location change of 5 seconds latitude and longitude amounts to about 1/8 mile, or a long city block. This is more than enough to move a transmitter into the boresight of an existing receiver (or vice versa), and to introduce serious interference where there was none before.

2. ***Antenna changes that do not increase the beamwidth.***[12] Although most of an antenna's energy output falls in the main lobe, as measured by the beamwidth, changes outside the main lobe can nevertheless significantly affect the interference potential. Suppose, for example, that an applicant coordinates and files a path in the lower 6 GHz band using ultra high performance 10 foot diameter parabolic antennas. Later, the party amends or modifies to show standard performance antennas of the same size. The beamwidth is the same, so the change is classed as minor. But a few degrees off the axis, the interference potential has increased by as much as 10 dB — and by more than 30 dB at 90 degrees from the axis.

3. ***Azimuth changes of 1 degree or less.***[13] In a 4 foot antenna at 18 GHz, the difference between main beam gain and gain at 1 degree discrimination angle is 11 dB. Similarly, in the lower 6 GHz band, an ultra high performance 10 foot antenna has a discrimination difference of 7-9 dB at 1 degree. Azimuth changes of only 1 degree thus can result in a significant increase in interference potential.

4. ***Reductions in bandwidth.***[14] Although a decrease in bandwidth is classed as a minor change, it can make a signal a more potent source of interference. For example, in

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12 47 C.F.R. § 1.929(d)(7).

13 47 C.F.R. § 1.929(d)(9).

14 47 C.F.R. § 1.929(d)(3).

evaluating co-channel interference, a 1.25 MHz signal interfering into a 2.5 MHz digital receiver requires a ratio of desired to interfering signal 11 dB higher than if the interfering signal had a 30 MHz bandwidth.[15]

Comsearch agrees the above changes are properly classed as "minor" so far as the application filing rules are concerned. There is no need to put these changes on public notice, and licensees should be able to implement them without prior Commission approval. But each of these changes should be conditioned on prior notice to all affected users.

B. Mere Notice to the Coordinator Does Not Afford Users Sufficient Protection Against Interference.

In lieu of frequency coordination for minor changes, the Commission requires the applicant or licensee only to notify the Commission and "the entity(ies) with which [the licensee] normally engages in coordination."[16] The Commission rejected a suggestion that notice also be sent to all parties involved in the original coordination,[17] because the Commission was confident that notification to the coordinator alone "is sufficient to allow coordinators, and other interested parties, to remain aware of such changes and keep their databases up-to-date."[18] It added: "We do not believe that the universe of parties affected by, or interested in, minor changes, as defined in new section 1.929, will be significant."[19]

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[15] These results are calculated in accordance with TIA TSB 10-F, pursuant to 47 C.F.R. § 101.105.

[16] Report and Order at ¶ 88.

[17] Report and Order at ¶¶ 86, 88.

[18] Report and Order at ¶ 88.

[19] Report and Order at ¶ 88.

The Commission's conclusions may well be appropriate for radio services that have a designated coordinator for each band of frequencies, such as land mobile operations under Part 90. Working from a database of frequencies, locations, power, antenna heights, and so on, a Part 90 coordinator assigns a frequency to each new application that will not interfere with other users. The coordinator does not ordinarily contact other licensees in the area. Under that kind of arrangement, the Commission is correct that notice of minor changes to the coordinator alone will usually suffice. As narrowly defined under Section 1.929, changes deemed minor in the Part 90 services are unlikely to cause new interference to existing users, and notice enables the coordinator to keep its database current.

But coordination procedures are very different in the fixed services. There, coordinators send full technical information on proposed paths to all potentially effected users. These users have an allotted time in which to respond, usually 30 days.[20] It is these users, not the coordinator, who are responsible for identifying potential interference cases. If any users object, the coordinator attempts to find a set of technical parameters acceptable to both the applicant and the objector. This bilateral process has worked well for over 20 years. It significantly reduces the potential for interference, makes actual harmful interference in the field a rare event, and minimizes the need for Commission involvement in interference disputes among licensees.

As Comsearch has shown above, many changes that qualify as "minor" under § 1.929 in fact threaten significant interference to preexisting point-to-point facilities. Notice only to the Commission and one coordinator will not reach the other coordinators, or other licensees who may be interested or affected.

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[20] 47 C.F.R. § 101.103(d)(2)(iv).

Even if an appropriate coordinator does receive notice of an interference-causing change, there is no mechanism for propagating that information — other than the coordination notice that the Commission has declined to require. Uninformed licensees may thus experience unexplained degradation or interruption of service. Where the victim receiver is part of a system used for public safety communications, transportation such as railroads, or utilities, interference may threaten safety of life or property. Interference to other types of communications will disrupt the efficient operation of businesses or state and local governments. Emerging technologies are at risk as well, in shared bands where changes to grandfathered systems in the fixed services may threaten new interference. Locating the source of interference is notoriously difficult. The task requires expensive and time-consuming monitoring, during which the interference will continue. Even if the source can be identified, modifying it to eliminate the interference will interrupt that user's service as well, and add to its cost.

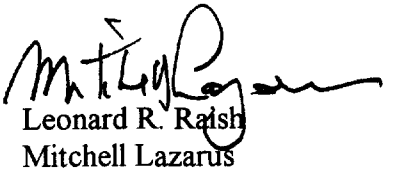
Frequency coordination is an efficient and inexpensive way of preventing interference in advance, before it occurs. To correct interference after the fact is far more costly and disruptive. Ironically, the Commission's amending the requirement for frequency coordination of minor changes is likely to cost more time and money than it saves, and to result in more interference disputes coming before the Commission.

CONCLUSION

Because coordination procedures for the fixed services are different from those for the mobile services, and for the reasons given above, the Commission should amend Section 101.103 to require prior notice to all affected users of any technical changes. In addition,

to resolve the circularity discussed in note 6, above, the Commission should delete Section 1.929(a)(5).

Respectfully submitted,



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January 13, 1999

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